COFFEE



LECTURE



b Universität Bern PRISMA for
Systematic Review
Projects: Tips for
Researchers



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Research Support Services Team
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Wednesday 19.04.2023 13:00, Zoom

$u^{\scriptscriptstyle b}$ PRISMA

Aim for today's session

- Introduce the PRISMA statement and related content
- Offer tips/considerations when using PRISMA and extensions
- Highlight common pitfalls
- Show examples of good reporting

- PRISMA stands for the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
- It is an evidence based guideline to facilitate transparent reporting
- In 2020, it was updated due to new advancements in evidence syntheses and technologies
- PRISMA has a 27 item checklist and flow diagram

- Key changes were made from the 2009 to 2020 statement
- 4 newly created items
- Revised flow diagram (4 templates)
- Use and cite the PRISMA 2020 statement for all future SR publications

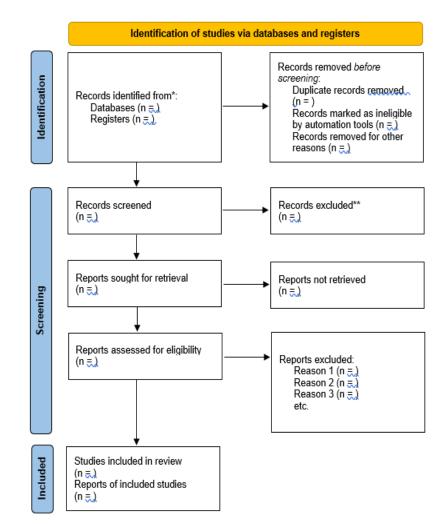
Table 1. Summary of changes to the PRISMA 2020 item checklist.

Checklist Item	Amendment
Abstract	The PRISMA 2020 statement directs authors towards a new, stand-alone abstract checklist
Methods	
Search	Display full search strategies for all databases, registers, and websites used, rather than for at least one database
Study selection	Disclose the number of reviewers allocated to screening each study and whether they worked autonomously. Disclose details regarding the utilisation of automation tools
Data items	Report all outcome definitions. For each outcome, disclose which results were collected or not and the methodology behind these selections
Synthesis of results	Divided into six sub-items: 1. Describe how eligible studies for each synthesis were identified 2. Describe the methodology used to prepare data for presentation or
atement: What's new and the	synthesis



PRISMA 2020 Checklist

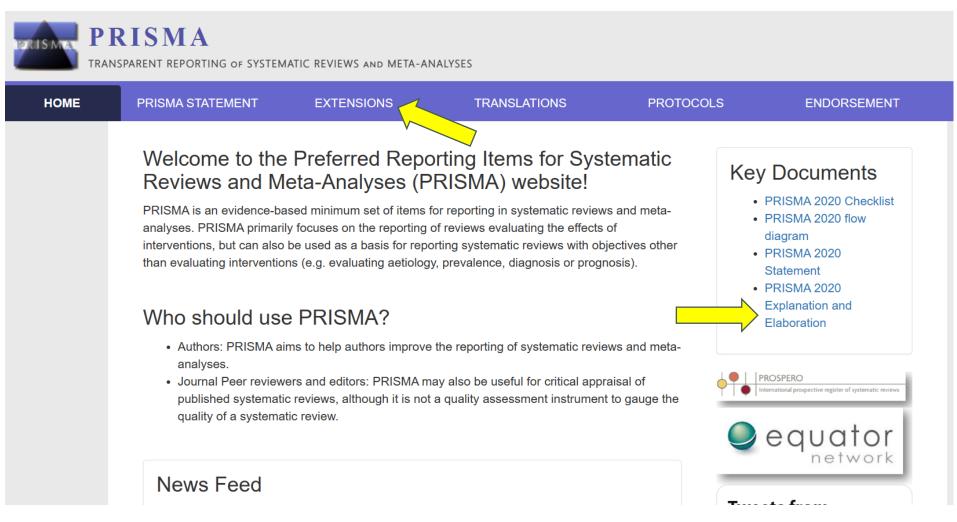
Section and Topic	Item #	Checklist item	Location where item is reported	
TITLE	TITLE			
Title	1	Identify the report as a systematic review.		
ABSTRACT				
Abstract	2	See the PRISMA 2020 for Abstracts checklist.		
INTRODUCTION				
Rationale	3	Describe the rationale for the review in the context of existing knowledge.		
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.		
METHODS				
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.		
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.		
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.		
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.		
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.		
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.		
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.		
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.		



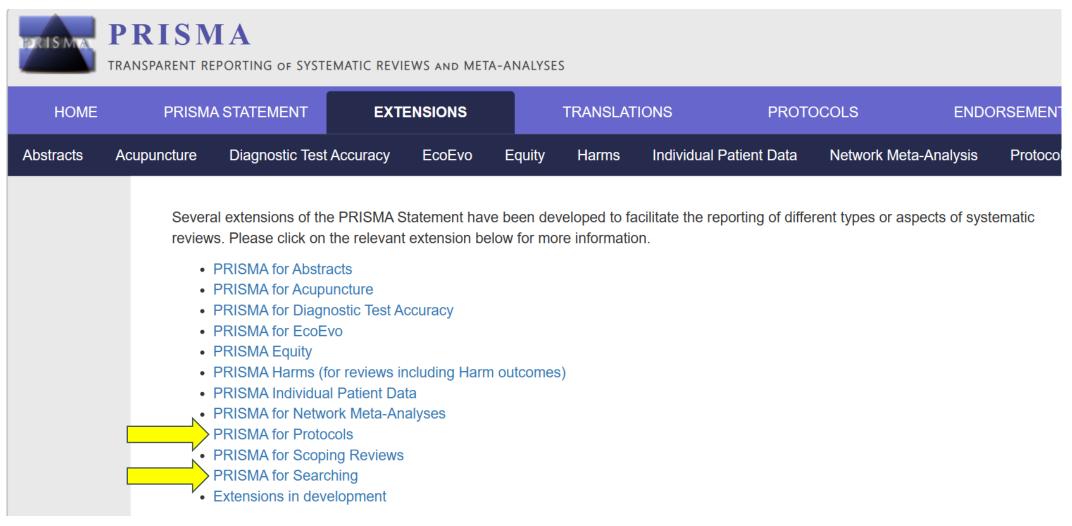
- There are extensions of the PRISMA statement for other types of projects
- All extensions contain key documents
- New extensions are being developed
- Review the PRISMA website to identify and incorporate the most appropriate extension(s)

$u^{\scriptscriptstyle b}$ PRISMA

Website



u^b PRISMA Extentions

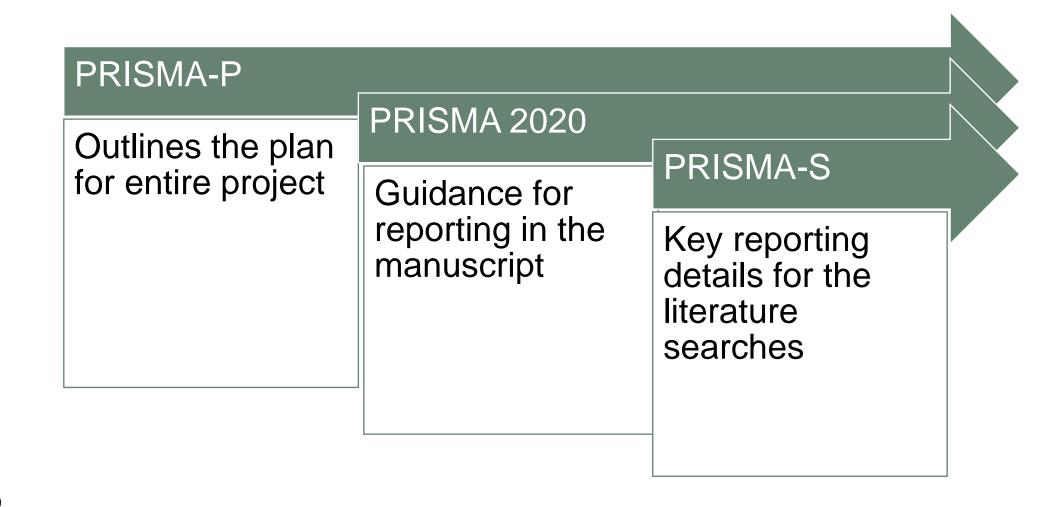


u^b PRISMA Extentions

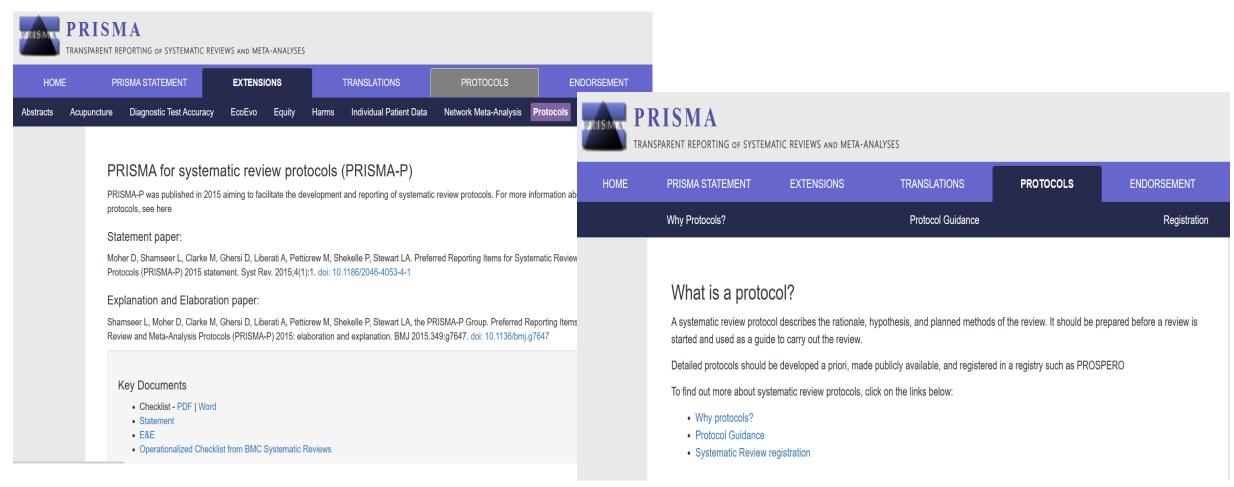
- Some extensions address particular aspects
- PRISMA-P is an extension for SR protocols
- PRISMA-S is for literature searches
- PRISMA-P and PRISMA-S are complementary to the PRISMA 2020

$u^{\scriptscriptstyle b}$ PRISMA

How do they work together?



u^b PRISMAStart with your protocol



u^b PRISMA-P

BMJ 2014;349:g7647 doi: 10.1136/bmj.g7647 (Published 2 January 2015)

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RESEARCH METHODS & REPORTING

Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation

Larissa Shamseer¹, David Moher¹, Mike Clarke², Davina Ghersi³, Alessandro Liberati (deceased)⁴, Mark Petticrew⁵, Paul Shekelle⁶, Lesley A Stewart⁷, the PRISMA-P Group

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic Item No		Checklist item					
ADMINISTRATIVE INFORMATION							
Title:							
Identification	1a	Identify the report as a protocol of a systematic review					
Update	1b	If the protocol is for an update of a previous systematic review, identify as such					
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number					
Authors:							
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author					
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review					
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments					
Support:							
Sources	5a	Indicate sources of financial or other support for the review					
Sponsor	5b	Provide name for the review funder and/or sponsor					
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol					
INTRODUCTION							
Rationale	6	Describe the rationale for the review in the context of what is already known					
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)					
METHODS							
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review					
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage					
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated					
Study records:							
Data management	lla	Describe the mechanism(s) that will be used to manage records and data throughout the review					

PRISMA PRISMA 2020 E&E

Research Methods & Reporting

PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews

BMJ 2021; 372 doi: https://doi.org/10.1136/bmj.n160 (Published 29 March 2021)

Cite this as: BMI 2021:372:n160

Linked RMR

The PRISMA 2020 statement: an updated guideline for reporting systematic reviews

Article

Related content

Metrics

Responses

Peer review

Matthew J Page , senior research fellow 1, David Moher, director and professor 2, Patrick M Bossuyt, professor 3,

Isabelle Boutron, professor 4, Tammy C Hoffmann, professor 5, Cynthia D Mulrow, professor 6, Larissa Shamseer, doctoral student⁷, Jennifer M Tetzlaff, research product specialist⁸, Elie A Akl, professor⁹,

Sue E Brennan, senior research fellow 1, Roger Chou, professor 10, Julie Glanville, associate director 11,

Jeremy M Grimshaw, professor 12. Asbjørn Hróbjartsson, professor 13. Manoj M Lalu, associate scientist and assistant professor 14.

Page MJ, Moher D, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R. PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. BMJ. 2021 Mar 29;372. https://www.bmj.com/content/372/bmj.n160

Item 6. Specify all databases, registers, websites, organisations, reference lists, and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted

Explanation: Authors should provide a detailed description of the information sources, such as bibliographic databases, registers and reference lists that were searched or consulted, including the dates when each source was last searched, to allow readers to assess the completeness and currency of the systematic review, and facilitate updating. 40 Authors should fully report the "what, when, and how" of the sources searched; the "what" and "when" are covered in item #6, and the "how" is covered in item #7. Further guidance and examples about searching can

be found in PRI: reviews.41

Example of item 6 of PRISMA 2020 checklist

"On 21 December 2017, MAJ searched 16 health, social care, education, and legal databases, the names and date coverage of which are given in the Table 1...We also carried out a 'snowball' search to identify additional studies by searching the reference lists of publications eligible for full-text review and using Google Scholar to identify and screen studies citing them...On 26 April 2018, we conducted a search of Google Scholar and additional supplementary searches for publications on websites of 10 relevant organisations (including government departments, charities, think-tanks, and research institutes). Full details of these supplementary searches can be found in the Additional file. Finally, we updated the database search on 7 May 2019, and the snowball and additional searches on 10 May 2019 as detailed in the Additional file. We used the same search method, except that we narrowed the searches to 2017 onwards."172

Table 1 The table displays for each database consulted its name (such as MEDLINE), the interface or platform through which the database was searched (such as Ovid), and the dates of coverage (reproduced from Jay et al 172)

Search strategy

Essential elements

Item 7. Present the full search strategies for all databases, registers, and websites,

including any filters and limits use Example of item 7 of PRISMA 2020 checklist

Explanation: Reporting the full details of all s Note: the following is an abridged version of an example presented in full in supplementary table S1 on each database) should enhance the transpar review to be more easily updated.40 42 Prese ability to assess how comprehensive the sea any errors. Furthermore, making only one se 1. Urinary Bladder, Overactive/ the other databases, as the search strategies made available. As well as reporting the sear can help readers judge how far the strategy criteria. The description of the search strates to identify keywords, synonyms, or subject in validate or peer review the search strategies 5. ((overactiv\$ or over-activ\$ or hyperactiv\$ or hyperactiv\$ or hyperactiv\$ or unstable or instability) adj3 detrusor\$).ti,ab. associated with improvements to search stra guidance and examples of reporting search

2. ((overactiv\$ or over-activ\$ or hyperactiv\$ or hyper-activ\$ or unstable or instability or incontinen\$) adj3

"MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE were searched via OvidSP. The

database coverage was 1946 to present and the databases were searched on 29 August 2013.

3. (OAB or OABS or IOAB or IOABS).ti.ab.

4. (urge syndrome\$ or urge frequenc\$).ti,ab.

6. Urination Disorders/

7. exp Urinary Incontinence/

8 Urinary Bladder Diseases/

13

u^b PRISMA-S

Rethlefsen et al. Systematic Reviews (2021) 10:39 https://doi.org/10.1186/s13643-020-01542-z

Systematic Reviews

RESEARCH Open Access

PRISMA-S: an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews



Melissa L. Rethlefsen^{1*}, Shona Kirtley², Siw Waffenschmidt³, Ana Patricia Ayala⁴, David Moher⁵, Matthew J. Page⁶, Jonathan B. Koffel⁷, and PRISMA-S Group

Abstract

Background: Literature searches underlie the foundations of systematic reviews and related review types. Yet, the literature searching component of systematic reviews and related review types is often poorly reported. Guidance for literature search reporting has been diverse, and, in many cases, does not offer enough detail to authors who need more specific information about reporting search methods and information sources in a clear, reproducible way. This document presents the PRISMA-S (Preferred Reporting Items for Systematic reviews and Meta-Analyses literature search extension) checklist, and explanation and elaboration.

Methods: The checklist was developed using a 3-stage Delphi survey process, followed by a consensus conference and public review process.

Results: The final checklist includes 16 reporting items, each of which is detailed with exemplar reporting and

Item 2. Multi-database searching

If databases were searched simultaneously on a single platform, state the name of the platform, listing all of the databases searched.

Examples

"The MEDLINE and Embase strategies were run simultaneously as a multi-file search in Ovid and the results de-duplicated using the Ovid de-duplication tool." [51]

"A systematic literature search was performed in Web of Knowledge™ (including KCI Korean Journal Database, MEDLINE, Russian Science Citation Index, and SciELO Citation Index)...." [52]

Explanation

Authors may choose to search multiple databases at once through a single search platform increase efficiency. Along with the name of the platform, it is necessary to list the names of

Item 4. Online resources and browsing

Describe any online or print source purposefully searched or browsed (e.g., tables of contents, print conference proceedings, web sites), and how this was done.

Examples

"We also searched the grey literature using the search string: "public attitudes" AND "sharing" AND "health data" on Google (in June 2017). The first 20 results were selected and screened." [60]

u^b PRISMA-S

- Checklist has 16 items
- It can be used by authors from a wide range of disciplines
- Works well for other review types

Section/topic	#	Checklist item	Location(s)					
INFORMATION SOURCES AND METHODS								
Database name	1	Name each Individual database searched, stating the platform for each.						
Multi-database searching	2	If databases were searched simultaneously on a single platform, state the name of the platform, listing all of the databases searched.						
Study registries	3	List any study registries searched.	$\overline{}$					
Online resources and browsing	4	Describe any online or print source purposefully searched or browsed (e.g., tables of contents, print conference proceedings, web sites), and how this was done.						
Citation searching	5	Indicate whether cited references or citing references were examined, and describe any methods used for locating cited/citing references (e.g., browsing reference lists, using a citation index, setting up email alerts for references citing included studies).						
Contacts	6	Indicate whether additional studies or data were sought by contacting authors, experts, manufacturers, or others.						
Other methods	7	Describe any additional information sources or search methods used.						
SEARCH STRATEGIES								
Full search strategies	8	Include the search strategies for each database and information source, copied and pasted exactly as run.						
Limits and restrictions	9	Specify that no limits were used, or describe any limits or restrictions applied to a search (e.g., date or time period, language, study design) and provide justification for their use.						
Search filters	10	Indicate whether published search filters were used (as originally designed or modified), and if so, cite the filter(s) used.						
Prior work	11	Indicate when search strategies from other literature reviews were adapted or reused for a substantive part or all of the search, citing the previous review(s).						
Updates	12	Report the methods used to update the search(es) (e.g., rerunning searches, email alerts).						
Dates of searches	13	For each search strategy, provide the date when the last search occurred.						
PEER REVIEW								
Peer review	14	Describe any search peer review process.						
MANAGING RECORDS								
Total Records	15	Document the total number of records identified from each database and other information sources.						
Deduplication	16	Describe the processes and any software used to deduplicate records from multiple database searches and other information sources.						

u^b PRISMAApplying PRISMA (examples)

- We will review some common pitfalls in publications applying PRISMA
- In addition, we will see examples of good reporting
- Evaluating the entire publication is the best way to determine its overall reporting quality

Image by Uniconlabs from flaticon.com

u^b PRISMACommon pitfalls

1

2. Methods

2.1. Study design

This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [25]. Additionally, the

2

Methods

Search Strategy

This study was conducted according to the key steps required for systematic reviews according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines [101]. A literature search was conducted using the 3

II. PRISMA-COMPLIANT RESEARCH METHODOLOGY

Articles on "ERP" are distributed across journals of various disciplines including social sciences, medical and non-medical. The current review uses a PRISMA-based systematic article selection approach (refer to Figure 1(a)). A literature

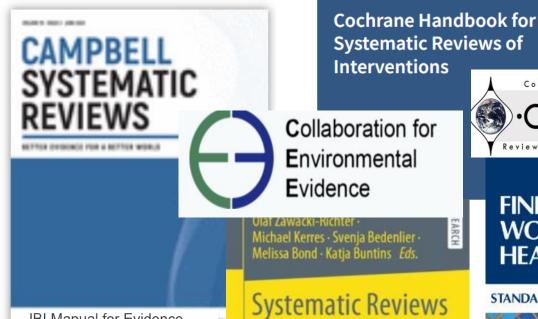
$u^{\scriptscriptstyle b}$ PRISMA

Guidance materials

- PRISMA only improves the reporting quality of a review
- Authors should consult guidance materials to help conduct their review







JBI Manual for Evidence Synthesis

- · About this Manual
- Contributors
- > Chapter 1: JBI Systematic Reviews
- > Chapter 2: Systematic reviews of qualitative evidence
- Chapter 3: Systematic reviews of effectiveness

Systematic Reviews in Educational Research

Methodology, Perspectives and Application

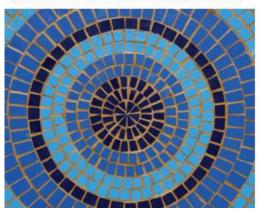






FINDING WHAT WORKS IN HEALTH CARE

STANDARDS FOR SYSTEMATIC REVIEWS



u^b PRISMABetter approaches

1

This systematic review was conducted according to the recommendations of Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al., 2022) and reported according to the Preferred Reporting Items for Systematic Reviews and Metanalyses (PRISMA) Statement (Page et al., 2021; see Appendix S1). This study answers the second question of the systematic review protocol registered in the Prospective Register of Ongoing Systematic Reviews (PROSPERO) (registration number PROSPERO 2020 CRD42020206077).

2

3.1 | Design

To integrate qualitative and quantitative evidence in this complex research question, a mixed-methods systematic review (MMSR) was conducted. This MMSR was informed by the Joanna Briggs Institute (JBI) methodology for a MMSR (Lizarondo et al., 2020). Results were reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses updated checklist (Page et al., 2021).

u^b PRISMACommon pitfalls

1

We conducted systematic literature search according to PRISMA guideline on Cochrane Library, PubMed, Google Scholar, ProQuest, EBSCO and ScienceDirect from 16 until 24 June 2022. Effect of vitamin D supplementation on diabetic foot

Search strategy

3

Interventions for reducing MOVs (Objective 1). We searched the MEDLINE, EMBASE, CINAHL, and LILACS electronic databases. The original systematic review conducted a search between 1990 and April 2014; we updated the original search strategy, with minor modifications, and ran the search from April 2014 to November 2019. A combination of MeSH and keyword terms on the topics of *immunization* and *missed opportunities for vaccination* were used (full search strategy available upon request).

-Literature search strategy

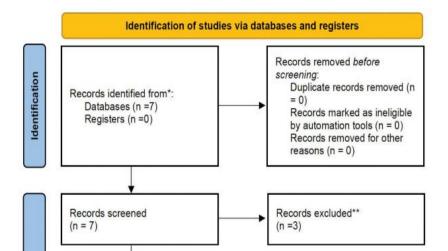
This study was conducted following the PRISMA statements (18). Searching process was carried out by two reviewers (J.J. S-E and S.G-M), with a search for articles in PubMed and SCOPUS electronic databases until 21 October 2021, with no restrictions or limits on language or year.

The following combination of Medical Subject Heading (MeSH) terms and keywords were used: (dens invaginatus OR dens in dente) AND (prevalence or frequency) AND (cone OR CBCT OR tomography).

Results

-Searching strategy

The searching strategy flowchart is shown in Fig. 1. Seven articles were identified after searching the PubMed database. In the screening, there were no duplicate pa-



u^b PRISMABetter approaches

develop detailed search strategies for each database. The search was developed for PubMed (NLM) and was translated to EMBASE (Elsevier), Web of Science (Clarivate Analytics), CINAHL (EBSCOHost) and Cochrane Central (Wiley) using a combination of keywords and subject headings. A grey literature search included ClinicalTrials.gov and the TRIP database. The search included no major limits or date restrictions. The final search was completed on April 27, 2021. The full search details are provided in "Appendix".

PubMed (NLM) from inception to 4/27/21 (4914 Results), EMBASE (Elsevier) from inception to 4/27/21 (3499 Results),

Web of Science (Clarivate Analytics) from inception to 4/27/21 (107 Results),

Appendix

Search criteria for the databases examined

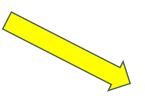
PubMed (NLM)

("Tamoxifen" [tiab] OR "Tamoxifen" [Mesh] OR "Nolvadex" [tiab] OR "Soltamox" [tiab] OR "Antineoplastic Agents, Hormonal" [MESH] OR "antineoplastic agent*" [tiab] OR "Aromatase Inhibitors" [Mesh] OR "selective estrogen receptor modulator*" [tiab] OR "Selective Estrogen Receptor Modulators" [Mesh]) AND (("Breast*" [tiab] OR "Breast" [Mesh]) AND ("breast reconstruct*" [tiab] OR "autologous breast reconstruct*" [tiab] OR "reoperat*" [tiab] OR "Reoperation" [Mesh] OR "microsurgical breast reconstruct*" [tiab] OR "microvascular breast reconstruct*" [tiab] OR "abdominal based breast reconstruct*" [tiab] OR "mammaplast*" [tiab] OR "Mammaplasty" [Mesh] OR "breast neoplasm*" [tiab] OR "Breast Neoplasms" [Mesh])) AND ("flap complication*" [tiab] OR "flap loss*" [tiab] OR "free flap*" [tiab] OR "free tissue flap*" [tiab] OR "thromboembol*" [tiab]

u^b PRISMABetter approaches

Literature Search

A medical librarian with expertise in systematic review methods and searching (C.P.) developed and executed the search after consulting with the research team. The search was developed based on key articles selected by the team. Prior to running the searches in each database, the search was peer-reviewed by a second medical librarian. The search was completed in PubMed through NCBI, Embase through Elsevier, the Cochrane Library on the Wiley Platform, CINAHL Plus through EBSCO, the Web of Science Core Collection, and Scopus through Elsevier, ProQuest Dissertations and Theses Global database, and Open Access Thesis Dissertations as part of the gray literature from database inception to 03/13/2020. An update was completed on



PubMed

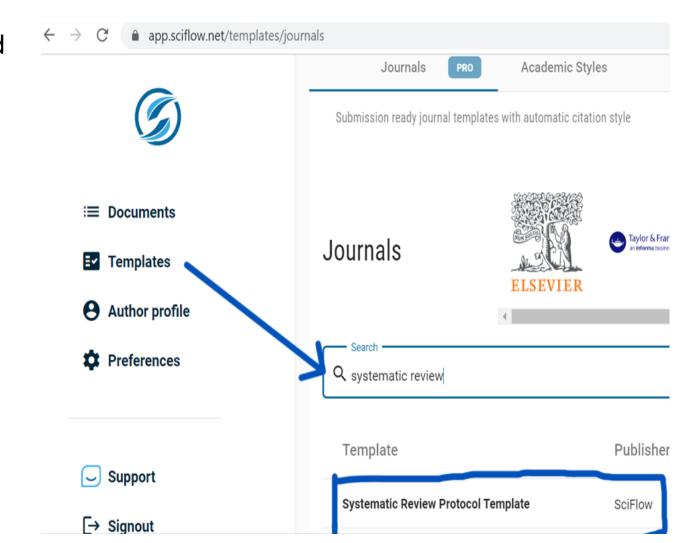
("vocal cord paralysis"[mesh] OR "glottal incompetence"[tw] OR "glottal incompetencies"[tw] OR "glottal incompetency"[tw] OR "glottal insufficiencies"[tw] OR "glottal insufficiency"[tw] OR "glottic incompetence"[tw] OR "glottic incompetences"[tw] OR "glottic incompetency"[tw] OR "glottic insufficiencies"[tw] OR "laryngeal nerve palsies"[tw] OR "laryngeal paralysis"[tw] OR "laryngeal paralysis"[tw] OR

u^b PRISMA Take-aways

- Examine the PRISMA E&E publication along with the checklist and flow diagram
- Begin with the PRISMA-P and assesmble your team
- Apply the PRISMA 2020 statement and any extension appropriately for reporting your review
- Consult and adhere to guidance materials for conducting/performing your review

u^b PRISMAStarting a systematic review?

- Search the <u>Prospero registry</u> for published SR protocols on your topic
- Consult with an information specialist on the protocol, finding guidance materials, selecting information sources, and developing search strategies
- For Sci-Flow users, an SR protocol template is available



Thanks



for your attendance



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Now there is time for...

Questions & Discussion

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